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# Review Article

## A Review on the Status of Hypertension in Six Southeast Asian Countries

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### ABSTRACT

The need for better blood pressure (BP) control has been advocated for years with its high correlation to cardiovascular morbidity and mortality. The rise of hypertension (HTN) in several countries, particularly the Southeast Asian region, has caused the increased numbers of cerebrovascular and cardiovascular diseases. Several factors have been identified that led to the rise of HTN; namely, the aging population, a lower socioeconomic status, lower educational attainment, sedentary lifestyle, a high Western diet, increasing obesity, and certain ethnicity. Although countries, such as Singapore, have better control of BP levels, most of the countries in the region have low awareness and treatment control of HTN. It is only through population-based programs in controlling raised BP that has been proven successful in HTN control.

**Key words:** Cardiovascular disease, hypertension, prevalence, Southeast Asia

### INTRODUCTION

Hypertension (HTN) is the most common chronic disease in both developed and developing countries and is a major public health concern affecting adults. It is the leading cause of mortality and disability-adjusted life year all over the world, causes more cardiovascular deaths than any other modifiable cardiovascular risk factors, and is the second only to smoking as a preventable cause of mortality.<sup>[1-2]</sup> In the United States, National Health and Nutrition Examination Survey of more than 23,000 subjects, more than 50% of deaths from chronic heart disease and stroke occurred among patients with elevated blood pressure (BP). Approximately 1 billion people were estimated to be hypertensive in 2000, and most of these identified to be hypertensive live in lower and middle-income countries.<sup>[3-4]</sup> There have been several measures done to control elevations in BP, and while in developed countries, the prevalence of HTN appears to be stabilizing, the rates in the Southeast Asian region continues to rise.

Southeast Asia is a subregion in Asia consisting of Thailand, Malaysia, Indonesia, the Philippines, Singapore, Vietnam, Laos, Cambodia, Myanmar, and East Timor. About a third of adults in the region have HTN and nearly 1.5 million deaths

are attributed to HTN annually.<sup>[5]</sup> It represents an important public health issue, as this is partly due in part to absent or poor disease management, with rates of uncontrolled HTN as high as 70%.<sup>[6]</sup> This paper looks at the different status of HTN prevalence, awareness, and control strategy available in six countries in SEA.

### Status of HTN in Malaysia

Malaysia has a multiethnic population of 30 million spread over 13 states and three federal territories.<sup>[7]</sup> It is a highly developing nation, and in line with modernization and a growing economy, several Malaysians have adopted new lifestyles, habits, and dietary patterns. In an analysis of three National Health and Morbidity Surveys (NHMS) conducted in 1996, 2006, and 2011, and a large-scale non-NHMS survey, there was a rising trend in the prevalence of HTN among adults more than 30 years old in the country.<sup>[8]</sup>

The latest prevalence of HTN was 43.5% in 2011. The surveys suggest that HTN is higher among the elderly, in men, those with lower educational attainment, and lower income level. HTN is a big problem among the elderly, with a prevalence peaking at 74% in the 65–69 age group. Between sexes, there was

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comparable prevalence though a slightly higher prevalence in men (33%) than in women (31%).<sup>[8]</sup> HTN prevalence is found to be increased by 12% among people with an income level of RM 400 or lower.<sup>[9]</sup> People living in the rural setting also has a higher prevalence of HTN compared to those living in the urban area.

What is improving in the management of HTN is the increasing awareness and control of BP. There was an 8% increase in the awareness between 1996 and 2011. Control of HTN improved overtime, with an increase of 37%. Men are more aware than women, but women had better control than men.<sup>[8]</sup>

Despite the increasing awareness and control of BP in Malaysia, the magnitude of HTN management needs additional attention. Strengthening screening for HTN in a primary care setting would be of immense value. Frequent health promotion and public health measures such as education on healthy lifestyle, particularly weight control, reduced salt intake, modification of eating habits, and increased physical activity would enhance measures in BP control.<sup>[8]</sup>

#### Status of HTN in Indonesia

Indonesia is the world's largest island and the fourth populous country in the world. The top three causes of mortality in the country are non-communicable diseases: Stroke, diabetes, and ischemic heart disease. HTN is the second only to cigarette smoking as the leading cause of cardiovascular disease (CVD) in Indonesia. The Indonesian Family Life Survey (IFLS) in 2007 identified that HTN has a prevalence of 47% in individuals 40 years and older. In the same survey, there is a diagnosis rate of 37% and only a quarter of the hypertensive population were given prescription medication.<sup>[10]</sup>

Another IFLS was conducted in 2015 with approximately 30,000 individuals aged 18 and above included in the survey.<sup>[11]</sup> Using the Joint National Commission 7<sup>[12]</sup> definition of HTN of more than 140/90 mmHg, the prevalence of HTN decreased to 33.4%, with more women being hypertensive (35%) compared to men. Among the hypertensives, 42% were diagnosed, with more women being diagnosed than men. More people dwelling in the urban setting were diagnosed compared to people living in the rural area. However, only about 11.5% were being treated with antihypertensive medications, and only 14% had their BP controlled to less than 140/90 mmHg. The prevalence of HTN also increases with age and is also prevalent in individuals with lower education. Other factors that may affect hypertensive Indonesians include sedentary lifestyle, body weight status, and psychosocial stress.

One problem facing the country is the low awareness of the disease, with less than half of the population in Indonesia is aware that they are hypertensive, and a minority are treated and controlled. Several factors come into play, such as age, lower education, lifestyle condition, and stress. Identifying these factors may guide public health programs and community-wide interventions which will effectively reduce BP levels in Indonesia.

These interventions should be effective, realistic, and affordable to deliver high-quality primary care treatment.<sup>[11]</sup>

#### Status of HTN in Vietnam

Vietnam is an emerging economy in the Western Pacific region and has been enjoying a rapidly growing success in transforming market forces. However, the downside of the economic growth is the changing of dietary patterns and lifestyle which led to an increase in the prevalence of atherosclerotic disease. HTN is now a major public health problem as it was found to have a high hospitalization rate and mortality in hospitalized patients diagnosed to be hypertensives.<sup>[13,14]</sup> Several factors were identified to cause these increasing trends in HTN such as poor lifestyle and a generally weak community-based health information system.

A national survey was conducted in 2012 to determine the prevalence of HTN in Vietnam which included 9823 participants. Results showed that the prevalence of HTN is 25.1%, with men being more hypertensive than women. Age is also a factor, with the numbers increasing with age. However, in hypertensives more than 65 years old, women have a higher number than men. Urban dwellers are more hypertensives than people living in the rural areas. Factors affecting HTN include family history of HTN, overweight and obesity, and having abdominal fat.<sup>[15]</sup>

Less than half of the hypertensives in the survey (48%) were aware that they have HTN. Unfortunately, only 29.6% being treated with antihypertensive medications, and only 10% have their BP reduced to <140/90 mmHg. Factors identified for the poor awareness of HTN include low educational level, people living in the urban area, and high family history of HTN.<sup>[13,15]</sup>

The increasing number plus the low rates of awareness and control have implications in the public health strategies of the country. There is a need to mandate a population-based strategy to lower the number of individuals with high BP. There is also a need to create a clinical strategy, so as to manage existing hypertensive individuals and lower the complications of elevated BP such as heart attack, heart failure, and strokes.

#### Status of HTN in Thailand

Cardiovascular diseases caused an estimated 145,000 deaths annually in Thailand,<sup>[16,17]</sup> and HTN is identified as the leading risk factor responsible for approximately half of the disease burden from CVD. HTN is highly prevalent and in the latest National Health Examination Survey in 2015, one of four adult Thais has HTN. Similar to the other Southeast Asian nations, there is low awareness of the disease. Of those aware of their BP levels, only 29% have their BP controlled to <140/90 mmHg.<sup>[18]</sup>

Identified risk factors of HTN among Thais include increasing age, obesity, and comorbidities. Among men, HTN is associated with physical inactivity, smoking, and fast food intake. In women, having a partner is associated with HTN.<sup>[18]</sup>

Due to the high prevalence but poor awareness of HTN in Thailand, the World Health Organization, United States Center for Disease Control and Thailand Ministry of Health decided to come together to strengthen HTN care in Thailand. Several

experts from the government, academe as well as physicians, nurses, and program managers attended a meeting in 2017 to discuss strategies in controlling BP. The program is called Global Hearts Initiative and commenced last 2018.<sup>[19]</sup>

### Status of HTN in the Philippines

Cardiovascular disease is the leading cause of morbidity and mortality in the Philippines and elevated BP is identified to be one of the major risk factors. The prevalence of HTN in the country has been increasing. Several cross-sectional studies have shown that the numbers are steadily increasing; from 11% in 1992 to 25% in 2008.<sup>[20]</sup> The National Nutrition and Health Survey (NNHES) of the Food and Nutrition Research Institute conducted in 2012 indicated a small decline in the prevalence of individuals with HTN, about 22.3%. Unfortunately, the survey is based on a single visit BP measurement alone. The same survey also showed that the highest prevalence of HTN is found in the 70 years old and above age group, males have a higher rate of elevated BP, patients who live in the rural areas, and those who have high economic status.<sup>[20]</sup>

In a prospective, multistage, stratified, two-phase, nationwide survey published in 2007, the prevalence of HTN in 3901 participants was 21%. HTN prevalence would increase by 50% in individuals more than 50 years old. It is more common in the urban areas, particularly in Metro Manila, and is more common in the middle economic stature. Similar to the other countries in Southeast Asia, awareness and control are very low. Only 16% of those surveyed are aware of having elevated BP. Treatment control was seen in only 20% of the hypertensives. In the survey, Filipino patients were prescribed more with a beta-blocker, but compliance rate is higher if they are on an angiotensin receptor blocker.<sup>[21]</sup>

The island nation of the Philippines has 7101 islands and the geography has caused difficulty in the delivery of healthcare in the country. Government programs are being implemented to include treatment of non-communicable diseases. Recently, the Universal Health Care Act has been passed which guarantees equitable access to quality and affordable health-care services for all Filipinos.

### Status of HTN in Singapore

In a developed country like Singapore, there is a declining prevalence of HTN, from 27.3% based on the Singapore National Health Survey in 1998 to a prevalence rate of 23.5% in 2010. This is attributed to the improvement of BP control, from less than half of the hypertensive population with <140/90 mmHg in 2004 to about 67% of the individuals with their BP controlled in 2010. More Singaporeans are also receiving treatment, 69.1% surveyed in 2010 are receiving treatment, compared to only 52.9% in 2004.<sup>[22]</sup>

However, similar to the other countries in Southeast Asia, Singapore is faced with an aging population. Individuals who are aged 60–69 years have 53.4% prevalence of HTN, compared to only 7.6% prevalence in aged 30–39 years. Singaporean men

are slightly hypertensive than the women. Based on ethnicity, the Malays had the highest prevalence in HTN, compared to the Chinese and Indian ethnic groups living in the tiny island of Singapore. In a survey among the elderly population in Singapore, other factors affecting HTN treatment and control include education, housing type, body mass, and diabetes.<sup>[23]</sup>

Although there was improvement in the medical services in Singapore, there is a need to look into programs targeting the elderly and their primary health-care providers. Several campaigns should be undertaken by the government to improve awareness and manage HTN in this population subset. A government subsidized Integrated Screening Program should be promoted, with the use of non-invasive BP measurement for easy detection of hypertensive individuals. Primary prevention through lifestyle changes should also be a particular focus of the government programs. As the aging population in Singapore is increasing, these preventive measures should go hand in hand with the aggressive treatment in Singapore and would eventually reduce the untreated HTN population.<sup>[23]</sup>

### Discussion

Several factors have been identified which can explain the increasing prevalence of HTN in the Southeast Asian region. Most of the countries have developing economies, and the improving wealth and technological advancement led to a more Western lifestyle. The urbanization made people more sedentary and adhered to an unhealthy diet. These factors led to increasing rates of overweight and obesity which increase the prevalence of HTN. The aging population in the region, such as Singapore, has increased the prevalence of HTN and should be looked at. Cigarette smoking was also identified to have a high prevalence in hypertensive patients in Southeast Asia. People who belong to a lower economic class and failed to reach a higher educational attainment have a higher prevalence of elevated BP, as seen in countries such as Vietnam and the Philippines. Ethnicity may also play a certain role in BP elevation, as seen in Singapore, as the Malays have a higher BP level compared to other ethnic groups.

Countries with better economies, such as Singapore and Malaysia, have shown improvement in awareness and treatment control of HTN. People have better access to health care and government programs are in place for primary prevention. However, there are countries in the region who lack health-care access; thus, we see poor adherence and treatment rates. There are steps being taken, such as the programs in Thailand, which may answer the poor treatment control in HTN.

National guidelines are also available in some of the countries in the region, such as in Singapore and Thailand. Majority of the countries also have public awareness campaigns on HTN. However, similar to the American and European policymakers, guidelines need to be updated, especially with the new data coming out for HTN. Management of HTN is complex and should be approached using a multisectoral collaboration. There

is a need for a strong leadership to execute all these programs, if we want to reduce the problem that is HTN.

## Conclusion

HTN is an urgent public health problem, particularly in Southeast Asia. Factors, such as lifestyle changes, aging population, cigarette smoking, and poor economic status, may lead to worsening HTN and can hinder adherence and control. A multisectoral collaboration on population-based programs may be needed to lower the prevalence of HTN.

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